

4 March 1976

STATINTL MEMORANDUM FOR: [REDACTED] Assistant for Resources  
FROM: [REDACTED] Chief, Information Systems Analysis Staff *att*  
STATINTL  
SUBJECT: Coordination of RD&E Program  
REFERENCE: DDS&T Memorandum No. 908-76, Same Subject,  
dated 20 February 1976

1. Reference asked for statements about new capabilities that would be worthwhile having three to five years from now. In the field of information systems, work is being done on a computerized system of file records control. The computerized system is based on (1) a bar code numbering system, (2) an optical scanner and (3) a mini-computer and interface. The Word Processing and the American Office magazine of November 15, 1975 reported that the Ames Corporation of Somerville, Massachusetts, has developed such a file tracking system which is currently in use at a hospital in Boston and in a later issue reported that CompuScan Inc. of Teterboro, New Jersey, has developed an improved system (page copies of brochures attached).

2. A computerized system for keeping track of hard copy seems to me to have great possibilities in revamping our document storage and retrieval system in the Agency and in revamping the entire registry system. I think it would be worthwhile for us to keep abreast of these developments and perhaps undertake an R&D effort to relate these developments to our Agency-wide problems of keeping track of hard copy files. A number of refinements could be made to any such computerized system including the tracking of the classification for a document, the declassification date, the number of documents declassified at any given time, etc.

In the issue Vol. 2, No. 10 we spoke of the records management system devised by Ames wherein bar codes (similar to that used in supermarkets) attached to a file record jacket were read by an optical wand.

First National City Bank of New York and CompuScan Inc. of Teterboro, N.J. have developed a wand that has a higher I.Q. than the one we described in WP/AO. Developed for use in the bank's Bond Department it can read "normally" printed numbers and letters. It can even read handwriting. The Ames reader is limited by the need to use preprinted bar codes. The ability of the FNCB/CompuScan wand to read printed material does away with the need to stock preprinted bar codes which are not for "human consumption." Now a typist can either type the number in, or, pressure sensitive transfer decals of pre-printed numbers can be used to label file records. The wand

itself is really a form of camera and transfers the scanned information to a computer where the recognition takes place.

As we indicated in our article describing the Ames system we consider it a major step forward in file management systems with broad application to any physical inventory situation where records or supplies are being transferred about. Wands which can read man readable symbols should hasten the acceptance and use of systems to keep track of records that are constantly circulating.

We understand that the initial models produced by CompuScan cost between \$10,000 to \$15,000 apiece. These prices are too rich to see any wide scale use of the wand, but as costs come down the "data-wand" could be the forerunner of low cost terminals to machine read printed documents. □

The CPT Corporation of Hopkins, Minnesota has announced the availability of a correcting ribbon as an optional feature on its CPT Rotary II typewriter. The option is available for purchase (\$300) or on a monthly rental (\$15). Either a cover-up or lift off correcting tape can be used.

When the correcting ribbon feature is used in the RECORD mode the CHARACTER ERASE key is held down. The incorrect character is erased on the recording medium and the type element backspaces. While the CHARACTER ERASE key is still held down the incorrect character is retyped to remove the visible impression from the paper. The CHARACTER ERASE key is then released and the correct character is typed. The feature can also be used without being in the RECORD mode.

The company has stated that the CPT Rotary II typewriter with the correcting ribbon feature is available now out of stock.

## TELEPHONE SYSTEMS ARE GOING ELECTRONIC

The Bell System has been filing tariffs with the Public Service Commissions of the various states in the union for its new Dimension series, micro processor based stored program PABX's.

We find it very interesting that a 100 line 24 trunk Dimension configuration goes for about \$324 per month in Georgia and \$585 per month in California.

Each Bell operating company is free to market telephone systems within its area as it sees fit, but in buying equipment from Western Electric all operating Bell companies pay the same price for a specific pro-

duct. So, why such a large difference in "markup" to provide the same type of service in two different areas?

As an operating monopoly, a utility is usually monitored by a local government agency—usually the state—to assure the utility makes a fair profit and that the charges its customers have to pay are not excessive. On the surface a difference of \$261 (\$585 less \$324) in the monthly tariffs seems excessive, but the low price filing is likely to be due to local competitive pressures from independent telephone equipment manufacturers in Georgia—pressures that aren't in California yet.

Since the Carterphone decision by the Federal Communications Commission in 1968, equipment obtained from sources other than the local regulated telephone utility are legal. Now a number of manufacturers have been supplying telephone equipment to businesses who recognize it is often cheaper to buy rather than rent from the local telephone company.

Features available with Bell's Dimension PABX include: automatic selection of long distance routes, automatic conferencing, call forwarding, restricting the ability of individual station sets to make toll calls, indicating the origin of calls by different ringing tones.

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## FILE RECORDS CONTROL — THE MAGIC WAND

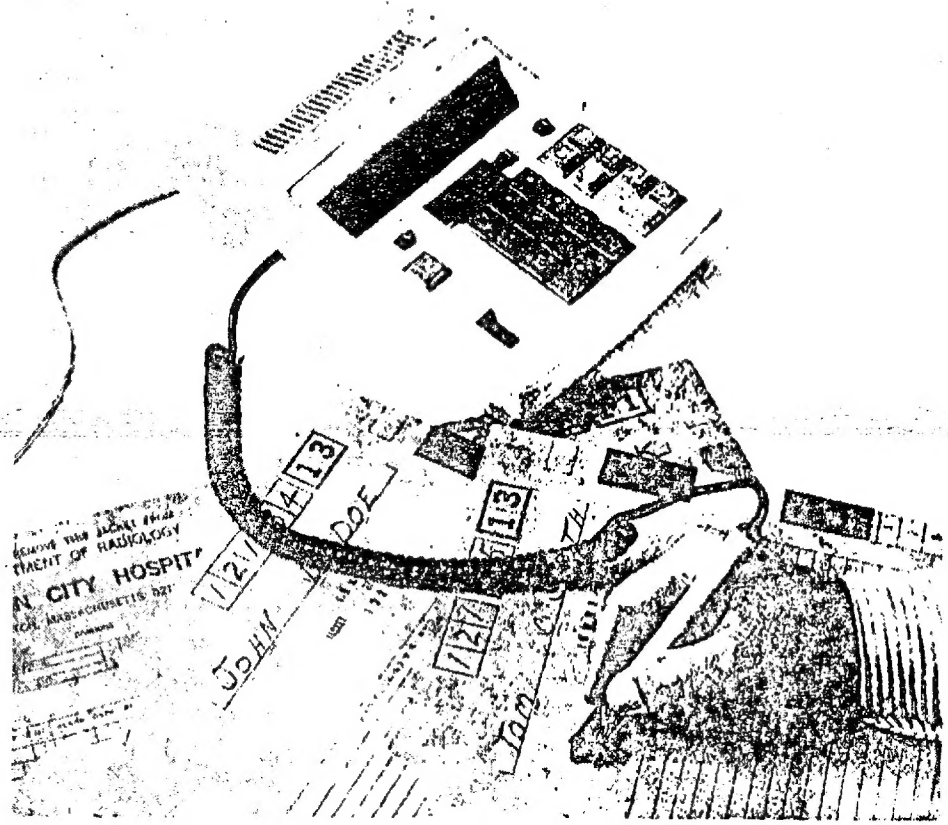
Engineers at the Ames Color-File Corporation of Somerville, Mass. have developed an innovative computerized file tracking system which is currently operational at a hospital in Boston for keeping track of medical and X-ray records.

Drawing on the developments of POS (Point of Sale) cash registers in the area of "optical wands" to machine read the bar codes printed on various grocery items during check-out, the Ames engineers have put together a computerized system based on:

- 1) bar code numbering system
- 2) optical scanner
- 3) minicomputer and interface

The accompanying picture shows a typical record jacket or folder, a bar coded identifying number attached to the jacket and an optical wand.

Although the system was originally developed for hospital use it obviously can be used in any operation with a need to track items or files in a high transaction volume, high traffic inventory situations. Some of the more obvious applica-



Shown above are the major elements in the Ames Guiding Light system: optical wand, input keyboard, file jacket with identifying unique bar code.

### INSIDE WP/AO

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tions we see are:

- 1) Trust department records
- 2) claims files - Insurance industry or consumer complaints
- 3) unit dosage system in the pharmaceutical industry
- 4) libraries

We realize that the system does not fall into the more conventional areas of word processing but we feel the filing aspect and record movement management control demonstrated by this system important enough to warrant coverage.

Briefly, the system works as follows: A request for a record is entered into the system through any keyboard located at remote locations throughout the facility. The location of the record is immediately indicated on a cathode ray tube (CRT) and a

request slip is printed out wherever the record is located. The request is posted in the computer, together with the time and date.

When the record is removed from the file, the person responsible for logging out records sets his lightpen to the **log out** function and strokes the wand across the bar code. The wand (OCR reader) reads the bar code and the transaction is posted in the computer as a LOG OUT.

When the requester receives the record (in the hospital, this could be the emergency room, X-ray reading room, etc.) he strokes his wand across the bar code. This acknowledges receipt of the record. The wand itself is self-identifying to the computer.

If the record is forwarded to

another location the same "sign-out, sign-in" procedure is used.

Each hour, or any other desired interval of time, the system prints out an exception report of all records requested and/or logged out but not acknowledged by the requester. The report is then used by a clerk to identify and clear up the problem.

Work is being done on more advanced forms of reading such as typed or printed numbers.

The First National City Bank has been experimenting with a wand reader made by the Compuscan Corp. of Teterboro, N.J. to read stock and bond certificates—but the Ames system is the first working installed file control (inventory management) system that has come to our attention.

## TYPEWRITERS — AN EARLY "SINGLE ELEMENT" MACHINE

The typewriter in the accompanying picture is a portable "single element" design machine which was first produced in 1893.

This portable wheel-type machine achieved sales in the hundreds of thousands both in this country and Europe.

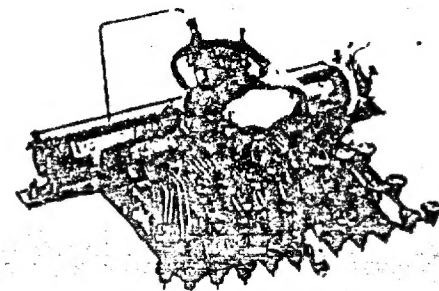
The inventor was G.E. Blickensderfer of Erie, Pa. The manufacturer was the Blickensderfer Mfg. Co. of Stamford, Conn. Production ceased in 1917.

The type wheel of the "Blick" moved to one of three levels to read the letter line and then revolved to

select the specific letter. The element struck downward on the platen to make the impression.

Interestingly, Remington-Rand placed the ninth model of this machine on the market in 1928 under the name of Rem-Blick with very little success. Portable type bar machines had replaced wheel type "single element" type as a favorite of consumers.

While history never repeats itself exactly, this Remington venture (or misadventure) brings back not too distant memories of Remington's aborted fling with text editing systems. □



*The Blickensderfer. A portable wheel type machine first produced in 1893.*

## ICS — A "BIG" SUPPLIER IN A SPECIALIZED MARKET SEGMENT

Some of our readers have asked us to recommend a supplier of shared logic systems. Without going into the specific needs and applications one cannot properly recommend any one supplier to the exclusion of all others.

Compared to the number of installed stand alone text editing systems, which number close to 200,000, the shared logic market is very small—in the neighborhood of 200 to 300 systems. Prices for the systems can range from \$60,000 to some \$150,000 depending on the size and complexity of the system.

The largest organization in this small, specialized market is ICS.

held corporations; Information Control Systems, Inc. and an affiliate, ICS Sales Leasing, Inc. of Ann Arbor, Michigan.

Estimates place the number of ICS terminals in the U.S. at close to 500 terminals. Assuming an average of 5 terminals per system it would indicate a field population of some 100 systems.

ICS's earliest systems were sold for phototypesetting applications. Today, roughly half the installed base is used for word processing applications.

Due to its prior valuable experience in phototypesetting ICS offers a wide

which can be used with its disc and tape oriented minicomputer systems. These include I/O typewriters, video display terminals, low, medium and high speed printers and on-line optical scanners. ICS can also handle conversion of magnetic tapes and cassettes.

Based on its relative size, invaluable experience in phototypesetting applications and the fact the company is running in the black, ICS is certainly one of the companies that should be contacted if a shared logic system appears to be the answer to your needs.

The corporation maintains its headquarters at 313 N. First, Ann